

WHAT IS CLAIMED IS:

1. An object tracking method for detecting and tracking an object in a picked-up image based on an image signal acquired by an imaging unit, comprising the steps of:

detecting an image changing area between at least two frames of images picked up at different time points by said imaging unit; and

correcting by detecting the position of said object based on said detected image changing area and setting said detected object position as a new detected object position in place of the present detected object position.

2. An object tracking method according to Claim 1,

wherein said image changing area detection step includes the step of comparing the two frames of images acquired at different time points by said imaging unit with each other and detecting an area associated with a greatest difference as the position of said object.

3. An object tracking method according to Claim 1,

wherein said image changing area detection step includes the step of comparing the two frames of images acquired at different time points by said imaging unit with each other and detecting an area associated with a difference equal to or larger than a

predetermined value as the position of said object.

4. An object tracking method according to Claim 1,

wherein said image changing area detection step includes the step of detecting the image changing area by comparing the two frames of images acquired at different time points by said imaging unit in an uncontrolled state.

5. An object tracking method according to Claim 4,

wherein the uncontrolled state of said imaging unit is defined as a state in which the imaging direction of said imaging unit is fixed and not changed.

6. An object tracking method according to Claim 1, further comprising the step of controlling the imaging direction of said imaging unit based on the relation between said detected object position and a predetermined reference position within the imaging field of said imaging unit.

7. An object tracking method for detecting and tracking an object in a picked-up image based on an image signal acquired by an imaging unit, comprising the steps of:

producing a template image of a predetermined size including a part of said object from the image acquired from said imaging unit;

detecting an image changing area between at

least two frames of images picked up at different time points by said imaging unit; and

correcting by detecting the position of said object based on said detected image changing area and setting said detected object position as a new template image in place of said template image of said predetermined size.

8. An object tracking method according to Claim 7,

wherein said image changing area detection step includes the step of comparing the two frames of images acquired at different time points by said imaging unit and detecting an area associated with the greatest difference as the position of said object.

9. An object tracking method according to Claim 7,

wherein said image changing area detection step includes the step of comparing the two frames of images acquired at different time points by said imaging unit with each other and detecting an area associated with a difference equal to or larger than a predetermined value as the position of said object.

10. An object tracking method according to Claim 7,

wherein said image changing area detection step includes the step of detecting an image changing area by comparing the two frames of images acquired at different time points by said imaging unit while said

imaging unit is in an uncontrolled state.

11. An object tracking method according to Claim 7,

wherein said template image production step includes the steps of:

conducting the template matching between the present image from said imaging unit and said template image, and detecting the position of a part of said present image of said object having the greatest degree of coincidence with said template image; and

setting a new template image by correcting the position of said object based on said detected partial image of said object.

12. An object tracking method according to Claim 7, further comprising the step of controlling the imaging direction of said imaging unit based on the relation between said detected position of said object and a predetermined reference position in the imaging view field of said imaging unit.

13 An object tracking method according to Claim 8,

wherein said image changing area detection step includes the step of setting a search area (by template matching) for detecting the position of said object based on said present object detection position, and changing said search range stepwise thereby to detect an image changing area between said two frames in each of said search ranges changed, and

wherein said object position correcting step includes the step of detecting an area having the greatest difference in said changed search ranges as the position of said object.

14. An object tracking method according to Claim 13,

wherein said object position correcting step includes the step of detecting a search area with the greatest difference of not less than a predetermined value in said changed search range as the position of said object.

15. An object tracking method according to Claim 13,

wherein said image changing area detection step includes the step of enlarging or moving said set search range stepwise.

16. An object tracking apparatus for detecting and tracking an object in a picked-up image based on an image signal acquired by an imaging unit, comprising:

an image input unit for converting the video signals acquired by said imaging unit sequentially into image signals; and

a processing unit for processing said image signals converted by said image input unit, in a predetermined sequence;

wherein said processing unit detects an image changing area between at least two frames of images picked up at different time points by said imaging

unit, and based on said detected image changing area, detects the position of said object and sets said detected object position as a new detected object position in place of the present detected object position.

17. An object tracking apparatus according to Claim 16,

wherein said processing unit compares two frames of images acquired at different time points from said imaging unit, and detects as the position of said object an area where the greatest difference is detected.

18. An object tracking apparatus according to Claim 16,

wherein said processing unit detects an image changing area by comparing two frames of images acquired at different time points from said imaging unit in an uncontrolled state.

19. An object tracking apparatus according to Claim 16, further comprising:

a control unit for controlling the imaging direction of said imaging unit based on the relation between said position of said object and a predetermined reference position within the imaging view field of said imaging unit, and tracking an intruding object by holding said intruding object within the view field of said imaging unit.